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Model error reduction in ensemble seasonal predictions with stochastic parametrisations

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Due to the coarse finite spatial resolution of climate models, the representation of processes on spatial scales smaller than the truncation and their feedback on larger scales is a source of systematic error. The impact of such unresolved scales in the ensemble seasonal forecast system is represented by a stochastic backscatter formulation. The scheme improves the representation of both the mean climate, especially in the tropical Pacific, and the variability, eg the frequency of winter blocking events over the North Pacific region. In addition, the scheme shows a significant increase in the spread of the ensemble, which contributes to a rise in the reliability of the predictions.